

INDIAN DRAGONFLIES.

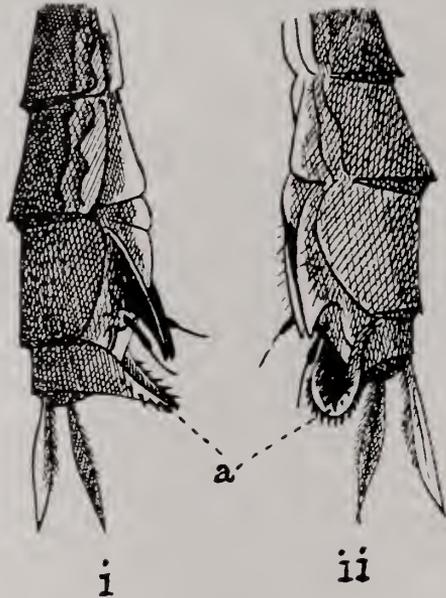
BY

MAJOR F. C. FRASER, I.M.S., F.E.S.

PART XIII.

(Continued from page 492 of this Volume.)

(With 5 Text-figures.)



* Fig. 1. i. Terminal segments of abdomen of *Eschna erythromelas* showing (a) dentigerous plate. ii. The same of *Eschna ornithocephala*.

Group—BRACHYTRON.

The genera included in this group are characterized by the symmetrical forking of *Rs* (5th nerve) and by the presence of only a single row of cells between *Rs* and *Rspl* (5th nerve and 5a) and between *Miv* and *Mspl* (7th nerve and 7a). (An exception is *Jagoria* in which *Rs* is unforked.)

The eyes are generally smaller and less contiguous than in group *Anax*; the frons usually broad or very broad, the occiput small and simple. The wings are long and broad or narrow, the reticulation open or close, the base of the hind-wing usually excavate and angulated in the male, rounded in the female, the stigma variable, long and narrow or short and broad.

The dentigerous plate of the female is variable, subtruncate, denticulate or forked. The anal superior appendages of the male usually lanceolate, the inferior subtriangular.

* This figure was omitted from the previous part and should have been included under the description of *Eschna erythromelas*. Vol. XXVIII, No. 2, p. 490,

Genus—JAGORIA.

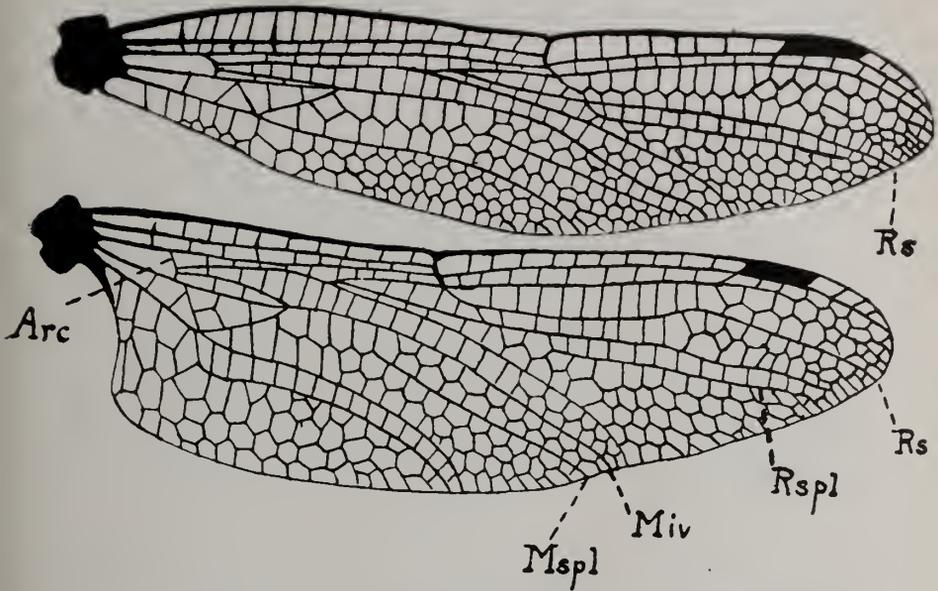


Fig. 2. Wings of *Jagoria pæciloptera*, Karsch. ♀ (x 2.5).

Jagoria, Karsch, Ent. Nachr., xv., p. 238, (1889); Laidlaw, Rec. Ind. Mus., Vol. xxii, p. 76, (1921); Martin, Cat. Coll. Selys, *Æschnines* p. 155, (1908).

Head moderately large; eyes large, broadly or moderately contiguous. Wings moderately long and broad, reticulation moderately open, trigones short, with 3-5 cells, basal space (prearcular) entire, 2 cubital nervures in all wings, hypertrigones entire or traversed by 1-2 nervures, *Rs* not bifurcated, only 1 row of cells between *Rs* and *Rspl*, 1-2 rows between *Miv* and *Mspl*, membrane short and narrow, not usually extending along the whole length of the wing—base, stigma braced, moderately short and thick, anal triangle of 3 cells, anal border moderately excavate.

Legs long and rather slender. Thorax robust.

Abdomen cylindrical, only slightly tumid at the base, constricted at the 3rd segment, widening again from 4 to 6 and then narrow and cylindrical as far as the anal end. Superior anal appendages longer than the 10th abdominal segment, variable in shape, the inferior more or less cylindrical, long and bifid, rather more than half the length of the superior.

The 10th abdominal segment in the female prolonged into a finely denticulate plate below. Anal appendages of female long and foliate.

Jagoria martini, Laid., Rec. Ind. Mus., Vol. xxii, p. 76-77, (1921).

Female only known. Length of abdomen 40 mm. Hindwing 40 mm.

Head. Labium, labrum and epistome orange brown, the upper surface of frons marked with a broad "T" shaped mark, brown in front and black against the eyes, frons yellowish, vesicle and occiput black, the latter fringed with a tuft of black hairs.

Prothorax dark brown.

Thorax dark brown marked with a pair of oblong, oval, bluish green, antehumeral bands which converge above but do not quite meet the mid-dorsal carina. From near the upper end of these bands, a pair of similar coloured, short, narrow bands run towards the humeral suture. On the sides two vivid green, broad bands, one at the middle and the other covering the entire metepimeron. Beneath orange brown.

Abdomen black above, orange brown beneath. Segment 1 marked laterally with vivid, greenish yellow, segment 2 with a lateral, yellow band and a pair of small, semilunar, green, apical spots, segments 4 to 6 with similar green spots but smaller on the latter. In addition segments 2 to 4 have each a pair of narrow, transverse, green marks at about their centre and there is a small, basal, yellowish green, triangular mark on the 2nd segment. Segments 7 to 10 unmarked.

Anal appendages small, about 2 mm. long.

Dentigerous plate on the 10th abdominal segment almost squarely truncate posteriorly and is furnished at the apex with about 15 small, irregularly placed teeth.

Legs black, coxae and trochanters and the bases of femora brownish.

Wings hyaline, the bases saffronated as far out as the 1st antenodal nervure, trigones of the forewings 3-celled, of the hind 4-celled, hypertrigones entire, 16 to 17 antenodal nervures to the forewings, 9 to 11 in the hind, 7 to 8 postnodal nervures to forewings, 8 to 10 in the hind, stigma dark brown.

Hab. Darjiling District. Described from a single specimen taken on Tiger Hill, Darjiling, 8,300', 26-vi-18 by Mr. S. W. Kemp. Type in Indian Museum.

Genus—*PERIESCHNA*.

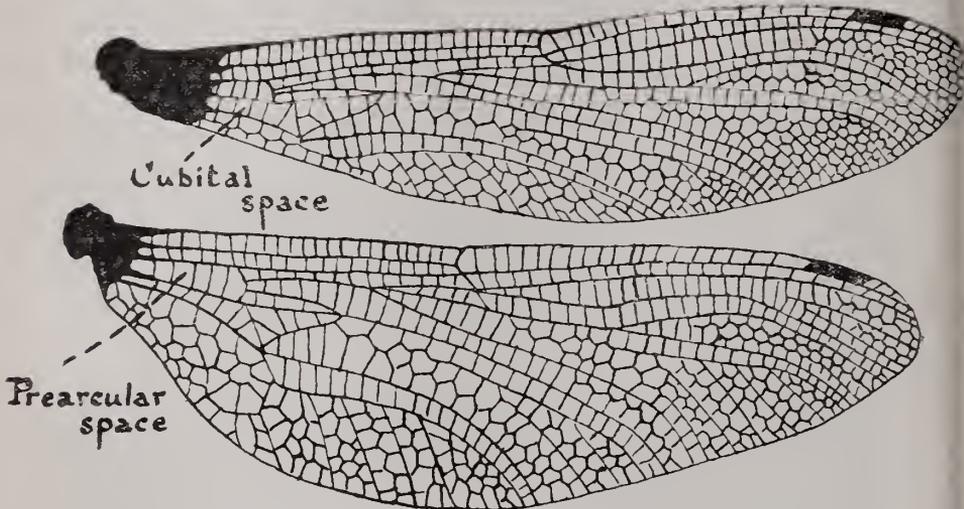


Fig. 3. Wings of *Perieschna magdalena*, Martin. ♀ (x 2.5).

Perieschna, Martin Cat. Coll. Selys, *Æschnines*, xix, xx, p. 157, (1908)
Laidlaw, Rec. Ind. Mus. Vol. xxii, p. 81 (1921).

Female. Head globular; eyes broadly contiguous; occiput small.

Wings broad, a little rounded at the apices, reticulation open, trigones, elongated, of 5 to 6 cells, prearcular and cubital spaces and hypertrigones traversed, the latter 3 times, *Rs* bifurcated nearer the node than the stigma or at

least halfway between these two structures, *Rsp1* running parallel to *Rs* and only 1 row of cells between them, stigma moderately short and stout, membrane moderately short and narrow.

Legs short and robust. Abdomen slender. Anal appendages short and slender. Dentigerous plate forked with fine, needle-like branches resembling those found in *Gynacantha*.

Periaeschna magdalena, Martin, Cat. Coll. Selys, *Æschnines*, xix, xx, p. 157, pl. vi, fig. 22; Laidlaw, Rec. Ind. Mus. Vol. xxii, p. 81, (1921).

Female. Abdomen 67 mm. Hindwing 44 mm.

Head. Labrum, labium, face and frons reddish brown, the base of the latter black with a medial prolongation forward.

Prothorax and thorax blackish brown marked with a narrow, yellow, antehumeral stripe on each side and 2 broad, yellow stripes laterally.

Legs blackish brown, reddish at the bases.

Abdomen tumid at the base, slightly constricted at the 3rd segment, and thereafter cylindrical as far as the anal end. Ground colour black marked with yellow as follows:—segments 1 and 2 with the sides broadly yellow and the dorsal carina finely, the 3rd segment with a basal, lateral spot, segments 4 to 7 with similar but less evident spots, segments 8 to 10 unmarked.

Superior anal appendages fine and short, but slightly longer than the 10th segment which is very short.

Wings enfumed, costa dark brown, stigma reddish, short and stout. All wings have a basal brown marking which extends outwards as far as the 1st antenodal nervure; membrane white.

Type female in Martin's collection Tonkin, Assam. Dr. Laidlaw reports a pair from Tura, Garo Hills, Assam, which are now in the Indian Museum.

Genus—**AUSTROÆSCHNA**.

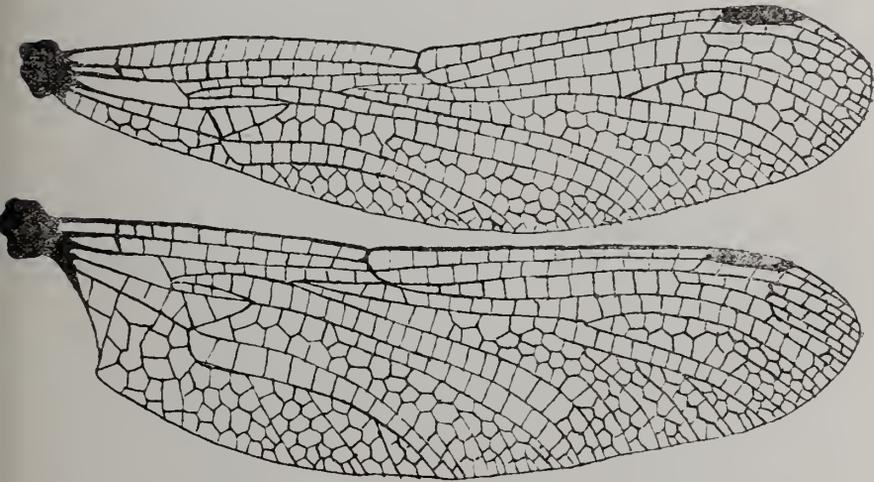


Fig. 4. Wings of *Austroaeschna intersedens*, Selys. (x 2.5).

Austroaeschna, Selys, Bull. Acad. Belg. Vol. 3. p. 732. (1883).

Acantheschna, Selys, *ibid.* p. 731, (1883).

Planæschna, Maelachlan, Ann. Mag. Nat. Hist., Vol. 27 (1895).

Dromæschna, Forster, Ann. Soc. Ent. Belg., Vol. 52 (1908).

Austroaeschna, Martin, Cat. Coll. Selys., Vol. xix, xx (1908).

Eyes slightly contiguous; occiput small; frons narrow as viewed from above; face narrow, subglobular, fringed around with long hairs.

Abdomen slender, tumid at the base, constricted markedly at the 3rd segment and from thence cylindrical till the end. Anal superior appendages long and slender, much longer than the 10th segment, inferior narrow and truncate, triangular. The dorsum of the 10th segment with a prominent carina. Oreillets robust.

Wings moderately narrow, reticulation rather close; trigones short, of 2 to 4 cells; prearcular space entire; cubital space and hypertrigones traversed; *Rs* bifurcated well before the stigma; only a single row of cells between *Rs* and *Rspl* and between *Miv* and *Mspl*; anal border markedly notched; anal triangle of 3 cells; membrane short and slender, not quite the length of the anal border.

Superior appendages long and slender, longer than the 10th segment; inferior short, truncate, triangular. Dentigerous plate of female subrounded, finely denticulate. Appendages short.

Hab. Australia. Represented by a single species within Indian limits.

Austroæchna interседens, Martin, l. c. p. 101, pl. iv., fig. 14; Laidlaw, Rec. Ind. Mus., Vol. xxii, p. 79, (1921).

Male. Abdomen 40 mm. Hindwing 37 mm.

Head. Eyes green, moderately contiguous; labium olivaceous; labrum, face and frons bright yellow, the latter which is raised into a fine point at its centre, smoky brown along the crest. The crest and borders of the face fringed with a row of long, black hairs.

Prothorax brown.

Thorax maroon brown marked with bright yellow as follows:—2 antehumeral stripes on the front of dorsum, separated by the dorsal carina and lying parallel to one another, the interalar sinus, tergum and some small spots at the bases of the wings. Laterally two broad stripes, one of which lies between the humeral and first lateral suture and the other covers the whole of the metepimeron.

Wings hyaline, stigma black, 3 cells in trigone of forewing, 4 in the hind, loop very small, of 4 cells, 4 cubital cells in forewing, 4 to 5 in the hind; nodal index:— $\frac{12-18}{13-11} \frac{17-13}{11-12}$; 1 row of cells between *Rs* and *Rspl*; 2 rows of cells between the bifurcation of *Rs*.

Abdomen brownish black marked with yellow as follows:—1st segment with a quadrate spot low down on the sides and a middorsal streak, 2nd segment with an apical, subtriangular spot low down on the sides and a middorsal streak which gradually tapers apically, the oreillets are also yellow, 3rd to 10th segments with a continuation of the fine, middorsal yellow line which broadens into a small triangle on either side the dorsal carina about the middle of the segments. In addition, there are on segments 3 to 9 lateral, subapical spots.

Legs dark brown, the coxae and trochanters yellow and at the base of the mid pair this yellow is prolonged into the thorax for a short distance.

Anal appendages long, sinuous and narrow, blackish brown. The inferior long, not quite half the length of the superior, narrow and triangular.

Female very similar to the male, the abdomen being stouter at the base, not constricted at the 3rd segment, the markings rather more pronounced. Anal appendages small, lanceolate, pointed.

Dentigerous plate simple, prolonged into a spot-like structure, armed with about 8 small spines.

Hab. Assam, Cherrapunji and Shillong.

Genus—*CEPHALÆSCHNA*.

Cephalæschna, Selys, Bull. Acad. Belg., (3), v., p. 739, (1883).

Caliaeschna, Selys, et Martin, Cat. Coll. Selys, *Æschnines*, xix, xx (1908).

Cephalæschna, Laid., Rec. Ind. Mus., Vol. xxii, pp. 77-79, (1921).

Eyes broadly contiguous ; frons raised in front or projecting markedly ; occiput small, its hinder border slightly raised.

Thorax short, robust.

Abdomen long and slender in the male, stout and robust in the female. Slightly tumid at the base in the male and slightly constricted at the third segment, the 10th segment with a prominent middorsal carina. Oreillets of male prominent, the posterior border armed with 5 to 6 robust spines.

Anal appendages nearly as long as the 9th and 10th segments, slender at the base, broadening inwardly after the first third, with a prominent mid-rib, pointed at the apex.

Wings hyaline or enfumed ; stigma markedly short usually braced ; trigones with 3 to 5 cells ; hypertrigones traversed three times ; are strongly angulated ; arcular space traversed usually 5 times ; *Rs* forked, 2 rows of cells between the fork ; loop with 5 to 8 cells, rather small, and stunted ; a basal antenodal nervure of the first series always present and continuous with the first traversing nervure of the basal (arcular) space ; base of hindwing in the male obtusely angular ; rounded in the female ; anal triangle with 3 cells ; *Rspl* and *Mspl* running parallel with *Rs* and *Miv* respectively and enclosing 1 or rarely 2 rows of cells especially near the margin of the wing ; antenodal and postnodal nervures numerous.

Legs long and rather slim ; hind femora with a row of closely-set, robust, short spines and 2 or 3 longer ones at the distal end ; tibial spines long and numerous ; claw-hooks robust, situated nearer the base than apex, at which point the claws rapidly taper.

Dentigerous plate of the female rounded and subdenticate.

Cephalæschna acutifrons, Martin, l. c., Ris. Supp. Ent., No. 5, pp. 55-56, tab. 2, fig. 5, (1916) ; Laid. l. c. (1921).

Female. (Male unknown.) Length of abdomen 52 mm., of hindwing 47 mm.

Face and frons olivaceous yellow, no markings above the frons which projects in front somewhat like the bows of a ship.

Thorax dark brown with a humeral stripe of bright green on each side and two lateral stripes of yellow bordered with vivid green.

Legs reddish yellow.

Wings broad, especially the hind, hyaline but saffronated at the bases ; stigma small, reddish brown ; costa orange ; 25 antenodal nervures and 21 postnodals in the forewing, 19 antenodal and 24 postnodal nervures in the hind.

Abdomen broad and tumid at the base, the 2nd segment somewhat ovoid, the 3rd slightly constricted, dark brown marked with yellow as follows :—the 2nd segment with 2 small, linear, yellow spots at the centre and 2 others at the base, segments 3 to 9 have similar spots, the medial ones very small and linear, the basal larger and more semilunar in form.

Anal appendages very small, linear, dark brown.

Hab. Type female in the collection of Selys, labelled, India, is probably from Assam or Bengal.

Cephalæschna masoni, Martin, *Caliaeschna*, Cat. Coll. Selys, *Aeschnines*, fig. 104, Pl. 111, fig. 12, p. 111 ; Laid. Rec. Ind. Mus., Vol. xxii, pp. 77-78, (1921).

Male. Length of abdomen 55 mm., of hindwing 41 mm.

Face yellowish, a fringe of hairs round its circumference, flattened ; frons yellow bordered finely with black.

Thorax blackish brown marked with a humeral band of green in front on each side and two lateral bands of the same colour.

Wings rather broad, hyaline ; stigma blackish brown, very short ; membrane short, white ; anal triangle of 5 cells ; forking of *Rs* begins well before the stigma ;

21 antenodal nervures and 11 postnodals to the forewing, 15 antenodal and 16 postnodal nervures to the hind.

Abdomen long and slender, black, the 1st segment with reddish hair, the 2nd with a basal, dorsal, yellow triangle, 2 transverse, linear spots of the same colour on each side of the dorsal crest at the middle of the segment and at the apical end, segments 3 to 9 with a linear spot of yellow on each side of the dorsal carina about the middle of the segment and a larger semilunar spot at the apical end nearly confluent across the dorsal carina, 10 unspotted.

Superior anal appendages long, slender at the base, then broadening spatulate-wise after the first third, the apex rounded, brown. Inferior appendage half as long as the superior, triangular.

Female unknown. It is possible that *C. acutifrons* is the female of *C. masoni*. The venation differs rather widely but this character is so variable a factor that too much importance should not be given to it.

Type male in the Selysian collection. Assam.

Cephalæchna lugubris, Martin, 110, fig. 103, Syn. Cat. Coll. Selys.

Aeschnines, xix, xx (1908).

Cephalæchna sikkima, Selys, in. litt.

Cephalæchna lugubris, Laid., Rec. Ind. Mus., Vol. xxii, p. 78, (1921).

Male. Length of abdomen 48-51 mm., hindwing 41 mm.

Head. Labrum, labium and lower epistome yellow, upper epistome green, frons in front shiny black, above yellow bordered with black, frons raised and narrow; occiput small, black.

Thorax short, blackish brown, marked with a green antehumeral band on either side of the front and laterally with two broad, green bands.

Legs blackish brown, the bases of femora reddish.

Wings hyaline, tinted with brown; stigma very short; brown; membrane yellowish, trigones made up of 4 cells; anal triangle with 3 cells; 2 rows of cells between the forking of *Rs*; 21-25 antenodal nervures and 11 postnodals in the forewings, 18-19 antenodals and 13-15 postnodals in the hind.

Abdomen long and slender, slightly tumid at the base, a little constricted at the 3rd segment, black marked with green as follows:—the 1st segment with a central, yellow spot, the 2nd with a dorsal, green line broken at its middle, 2 linear transverse streaks at the centre of the segment, separated by the middorsal carina, and finally an apical, green annule, segments 3 to 8 with, similar, central, linear marks and apical ring, segments 9 and 10 unmarked, the latter with a prominent, middorsal crest.

Anal appendages brown, nearly as long as the combined length of the last two abdominal segments, very slender at the base, broadly spatulate after the first third, the apex with a small spine. Inferior appendage triangular, about two-thirds the length of the superiors.

Female. Very similar to the male but the abdomen shorter and stouter. The frons without the black stripe above, the face olivaceous green. The 10th abdominal segment very short above. Anal appendages short, very slender filiform and pointed at the apex, brown.

Types in the collections of Martin and Selys.

Hab. Sikkim.

Cephalæchna orbifrons, Selys, Bull. Acad. Belg., (3) v. p. 739 (1883)

Martin, Cat. Coll. Selys, *Aeschnines*, xix, xx (1908); Laid. Rec. Ind. Mus., Vol. xxii, p. 78, (1921).

Male. Length of abdomen 45 mm., hindwing 40 mm.

Head: Labrum, labium, epistome and frons uniform olivaceous and quite unmarked; eyes dark olivaceous, broadly contiguous; occiput small, black.

Prothorax dark brown bordered finely with yellow.

Thorax short but robust, dark brown marked with apple green, an antehumeral

streak on either side of the front, broad above, tapering anteriorly. Laterally two broad stripes of the same colour, the first a little interrupted above at its upper corner, the second covering the whole of the metepimeron and just separated from a small spot of green at the base of the hindwing.

Legs blackish brown, the coxae yellow, long and rather slim.

Wings hyaline, rather broad; stigma black, moderately short and usually braced, that of forewing distinctly larger than that of the hind; trigones very variable, that of forewing with 3 to 5 cells, that of the hind with 3 or 4 cells; loop with 5 cells; 2 rows of cells between the forking of *Rs*; 7 to 8 cubital nervures in the forewing, 6 in the hind; hypertrigones traversed 3 times in all wings; reticulation rather close; nodal index:— $\frac{11-18}{13-16}$ $\frac{17-11}{15-13}$; anal triangle with 3 cells, membrane small, white.

Abdomen long and slim, tumid at the base, constricted at the third segment, dark brown marked with green and yellow as follows:—1st segment broadly greenish yellow on the sides, a dorsal, green triangle at the base and an apical, oval spot of the same colour; 2nd segment with the sides broadly yellowish green and the dorsum with 2 transverse, wedge-shaped spots about the middle, separated by the dorsal crest, a basal irregular spot of green and an apical streak of the same colour on the dorsal carina which is united with an apical, yellow annule; 3rd segment with the basal half of the dorsal carina yellow and a lateral, basal triangle of yellow at its centre, 2 transverse, yellow spots; 4th to 7th segments with the same central, yellow, transverse spots and apical annules of yellow; 8th and 9th segments with only the apical annules; 10th segment with only a lateral, yellow spot.

Anal appendages dark brown, the superior with a prominent mid-rib, narrow at the base, broadening spatulatewise after the first third, the apex bevelled, pointed as seen in profile, the upper surface near the apical end furnished with long, stiff hairs, the inferior about two-thirds the length of the superior, triangular, curling upwards.

Female. Length of abdomen 47-49 mm., hindwing 40-42 mm.

Head: Labrum bright ochreous, rest of face, labium and frons olivaceous as in the male; occiput black. Face as in the male, is fringed with a margin of long, stiff, black hairs.

Rest of thorax and abdomen very much as for the male, the sides of the 2nd segment are less broadly yellow, the sides of the 3rd are more extensively so, reaching as far as the apex, this colour also extends along the sides of the 4th and 5th segments and there is a trace of it on the 6th and 7th, the sides of the 8th to 10th being broadly yellow.

The other markings are as in the male but more pronounced and distinct.

Wings hyaline tinted at the extreme base with pale amber or saffron. Trigone of forewings with 4 to 5 cells, 5 in the hind; loop with 4 to 5 cells; hypertrigones traversed 3 times in all wings; 5 to 6 cells in the anal triangle; nodal index:— $\frac{19-20}{14-16}$ $\frac{11-14}{13-15}$ $\frac{19-12}{15-16}$; a basal, antecostal of the second series in all wings.

Membrane ashy, small.

Legs yellow, the joints black as also are the spines on femora and tibiae.

Anal appendages extremely short, filiform, pointed at the apex, brown.

Dentigerous plate rounded and subdenticate.

Hab. Bengal. Darjiling District. I am indebted to Mr. H. Stevens for the chance of examining a number of these insects. The male as far as I know has not yet been described. The co-type male is in my own collection. I find as a result of my examination that the venation of this species varies very widely and to a less extent, the same applies to the markings. From this I deduce that the number of species described by Martin will probably resolve

themselves into only two species. The coloured illustrations given in the Cat. Coll. Selys both for the *Corduliinæ* and the *Æschninae* are exceedingly fallacious and to take one instance only, e.g., that of *Hemicordulia asiatica*, no one knowing the living insect would recognise it from the coloured illustration given in the work cited. It will be seen from the above descriptions that they will equally fit either *lugubris*, *acutifrons* or *orbifrons*, not conforming to any entirely. The descriptions have been made from Mr. H. Steven's specimens and as an alternative to giving them specific rank, I have placed them as *C. orbifrons*.

Genus—GYNACANTHÆSCHNA, gen. nov.

Gynacanthæschna, gen. nov.

Cephalæschna, Karsch, Ent. Nachr., xvii, No. 20, pp. 6-7, (1891);

Laid., Rec. Ind. Mus., Vol. xxii, p. 78, (1921).

Similar to the last genus in most respects but the neururation differs somewhat as also does the dentigerous plate of the female.

Wings rather narrower, usually a little enfumed; stigma markedly short, usually unbraced (or it would be better to say that the brace has shifted outwards and meets the stigma distal to its inner, posterior corner), 2 to 3 nervures converge on the posterior border of the stigma especially in the female; trigones with 3 cells in the forewings, usually 4 in the hindwing, other points as for *Cephalæschna*.

Dentigerous plate of the female forking into two stout spines very similar to those seen in genus *Gynacantha*.

Gynacanthæschna sikkima, (Karsch.) l. c.

Caliæschna sikkima, Martin, Cat. Col. Selys, *Æschnines*, xix, xx (1908); MacLachlan, Ann. Mag Nat. Hist., (6) xvii, pp. 409-425 (1905).*

Cephalæschna sikkima et *Cephalæschna* sp. Laid. Rec. Ind. Mus. Vol. xxii, pp. 77-81, (1921).

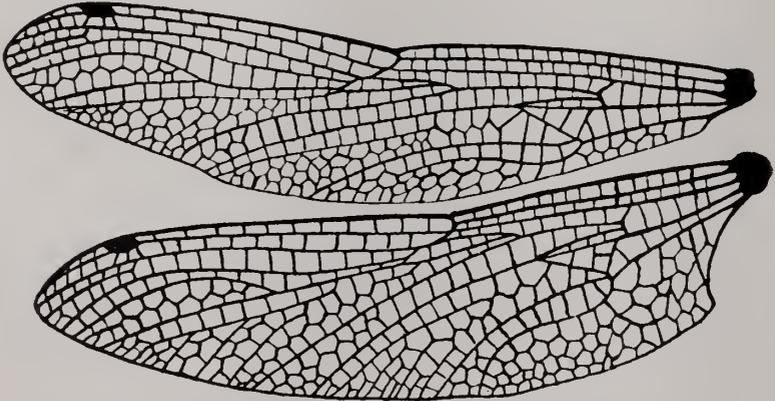


Fig. 5. Wings of *Gynacanthæschna sikkima*, Karsch, (x 2·3).

Male. Length of abdomen 46 mm., hindwing 40 mm.

Head. Labium, labrum, epistome and frons olivaceous brown, the lips somewhat more ochraceous; occiput black, small, fringed with black hairs; a fringe of longish, black hair also margins the front crest of the frons and is continued down on either side of the face; eyes broadly contiguous, olivaceous green.

Prothorax brown margined finely with yellow.

Thorax short but robust, dark chestnut brown marked with green, the dorsum bearing apple green, antehumeral bands which taper slightly forwards, the sides entirely green except for a band of the ground colour at the middle which divides the green into a broad, anterior band and a broader, posterior covering the whole of the metepimeron.

Wings slightly and uniformly enfumed, long and rather narrow; stigma short, dark brown, over 3-4 cells in the forewing, only over 2 or $1\frac{1}{2}$ in the hind, usually unbraced but a sloping nervure meets the stigma a little distal to its inner end, the stigma of the hindwing is much smaller than that of the fore; trigone of forewing traversed regularly 3 times, that of the hind 3 to 4 times and very irregularly, a nervure running from the base may join the first traversing nervure or run backwards to the outer side of the trigone, thus enclosing a triangular cell; mem-

brane white; nodal index:— $\frac{10-18}{13-15}$ $\frac{19-19}{17-13}$; reticulation rather close.

Legs long and rather slim, the femora reddish brown except at the distal ends where they turn dark, tibiae black, armature of the legs as for *Cephaloschna*.

Abdomen long and slim, tumid at the base, constricted at the 3rd segment, cylindrical thereafter, black marked with green and yellow as follows:—segment 1 broadly yellowish green at the sides, segment 2 also broadly yellow at the side, and the dorsum bearing an apical annule which is contiguous with a short, linear stripe on the dorsal carina, this stripe broken at the centre of the segment and here, on either side of the dorsal carina but not quite meeting it are 2 linear, transverse, yellow lines; segment 3 has an apical, narrow annule, 2 triangular, small, yellow spots situated nearer the base than apex and slightly separated by the dorsal carina, these spots are limited basally by the transverse ridge of the segment and low down on the sides at the end of this ridge is another small, yellow spot, finally at the base, on the sides is a largish, subtriangular spot; segments 4 to 7 have the apical annule and the two spots margining the transverse ridge; segments 8 and 9 have only the apical annule, whilst 10 has merely a small, lateral, yellow spot.

Anal appendages as long or nearly as long as the two last abdominal segments, slim at the base, broadening after the first third especially inward, traversed by a strong midrib, bevelled at the apex where they end in a small point, brown; inferior about two-thirds the length of the superior, curling strongly upwards, triangular.

Female. Length of abdomen 45 to 47 mm., hindwing 41 to 43 mm.

Very similar to the male in colouring but a much bulkier and stouter insect, the abdomen tumid at the base and not constricted at the third segment, rather flattened from side to side, the 8th and 9th segments broadened from above down.

Head. Labium and labrum bright ochreous, the rest of face and frons golden brown; eyes brown; ocellus very small, black, with a crest of short black hairs.

Thorax as for the male, the antehumeral bands are of almost the same width throughout but are rapidly pointed at the anterior end.

Legs as for the male but the spines on the femora are more scanty.

Wings long and broader than those of the male, hyaline, the bases saffronated, this paling as far as the are which is acutely bent; stigma only slightly smaller in the hindwing, the difference in size not nearly as marked as in the male, over 2 cells in all wings, braced but the brace not running from the extreme, proximal end of the stigma, dark brown; trigones with 4 cells in all wings; 7 cells in the loop; *Rs* forked a long way from the stigma, 2 rows of cells between the branches

of the fork; nodal index:—Karsch's specimen $\frac{10-18}{12-15}$ $\frac{20-11}{16-13}$; Laidlaw's

$\frac{9-19}{13-15}$ $\frac{19-12}{16-13}$; Stevens, $\frac{12-20}{15-15}$ $\frac{20-12}{16-14}$ (It will be seen that the combined number of ante and postnodal nervures in the forewings of the first two speci-

mens comes to 31 for the right wings and 28 for the left whilst in both of the forewings of Stevens' specimen there are 32.) There is a basal antenodal of the 2nd series in all wings.

Abdomen black marked with green and yellow as follows :—1st segment with a small, dorsal streak of yellow and the sides broadly apple green ; 2nd segment marked as in the male but the sides more broadly and the basal half green turning gradually to yellow apically ; segments 3 to 7 have an apical, dorsal, yellow triangle formed by the confluence of 2 spots and a transverse, triangular spot on the transverse ridge. (This ridge has been named the "jugum" by Dr. Laidlaw), this spot also formed by the confluence of 2 spots ; segments 8 to 10 are broadly yellow on the sides.

Anal appendages very short and filiform, brown.

Dentigerous plate which has been figured in the preface to the subfamily, strongly forked into robust spines, directed downwards.

Hab. Type from Sikkim, in the Berlin Museum is a female. Laidlaw's specimen is also a female, from Cherrapunji, Assam, now in the Indian Museum. The male, which has not been described before is from Gopaldhara and I am indebted to Mr. H. Stevens for it. I have seen also a female collected by Mr. Inglis above Mangphu, 5,500'.

The differences between the descriptions of Karsch's *C. sikkima* and Laidlaw's *Cephalæschna* sp. are not greater than those between individual specimens collected by Mr. Stevens and Mr. Inglis so that I have no hesitation in treating them as one and the same species.

(To be continued.)
